TC2001

‘High current’ Addendum to User Manual ref: HA174760

This Supplement contains information relating to installation and wiring details for TC2001 750A to 1200A (nominal) thyristor units, in two versions:

- **Compact Version** with integral control electronics
- **MC Option** with separate driver unit.

The Compact version is listed under the product code TC2001 **without MC option** (see Product Code, pages 2 & 3).

The thyristor stack and the separate driver unit are listed under the product code TC2001 **with MC option.**

For Safety instructions,
Relevant European Directives,
Operation and commissioning,
Configuration and maintenance
please refer to the user manual for the TC2001 series (ref: HA174760).

To install the MC2001 driver unit and to wire low-level signals (setpoint, enable, retransmission, alarm) please refer to the manual ‘MC2001 Installation and operating instructions’, ref: HA175273 ENG.

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PRODUCT CODE (750A to 1200A Power Units)

Series/ Operating mode/ Nominal current/ Nominal voltage/ Auxliary voltage

Series	Code
Power controller	TC2001

Operating mode	Code
3-phase. With two controlled phases	02
Single phase. Control of two independent loads	21

Nominal current	Code
750 amps	750A
900 amps	900A
1200 amps	1200A

Nominal voltage	Code
100 volts	100V
110 volts	110V
115 volts	115V
120 volts	120V
200 volts	200V
220 volts	220V
230 volts	230V
240 volts	240V
277 volts	277V
380 volts	380V
400 volts	400V
415 volts	415V
440 volts	440V
480 volts	480V
500 volts	500V
660 volts*	660V
690 volts*	690V

*Voltages not available for MC option

Note:
In order to avoid malfunction for supply voltages less than 80%, the nominal voltage of the TC2001 controller **must** correspond to the voltage of the supply used.

Auxiliary voltage	Code
Fan supply	115V
	230V

Input A/Input B/Thyristor firing mode/Controlled parameter/Manual/options/96/00

Input A	Code
3-phase or single-phase operation	
0-5V	0V5
1-5V	1V5
0-10V	0V10
2-10V	2V10
0-20mA	0mA20
4-20mA	4mA20

Input B	Code
3-phase operation (no input B)	00
Single-phase operation	
0-5V	0V5
1-5V	1V5
0-10V	0V10
2-10V	2V10
0-20mA	0mA20
4-20mA	4mA20

Thyristor Firing Mode	Code
Logic ('On/off')	LGC
'Fast cycle' burst firing	FC
'Slow cycle' burst firing	SC

Controlled Parameter	Code
Basic version: Compensation for supply variations	00
Control board (option):	
Load current squared	I2
Load voltage squared	V2
Active power	W

Manual Language	Code
English	ENG
French	FRA
German	GER

Options	Code
60Hz frequency	60H
Current measurement for options: 'control board' (I2, V2 & W codes) 'Bargraph' (BAR code) or 'Unbalance detection' (PLU code) or pre-fitted current transformer	CTE
Bargraph (level of controlled parameter)	BAR
Phase unbalance detection (only fo 3-phase systems)	
- contacts open in alarm	PLU
- contacts closed in alarm	IPU
'Fuse blown' microswitch	FUMS
Without internal fuses	NOFUSE
Separate driver unit	MC

Note: If several options are required, follow the order of the code listing.

COMPACT VERSION

THYRISTOR STACK WITH INTEGRAL CONTROL ELECTRONICS

OVERVIEW

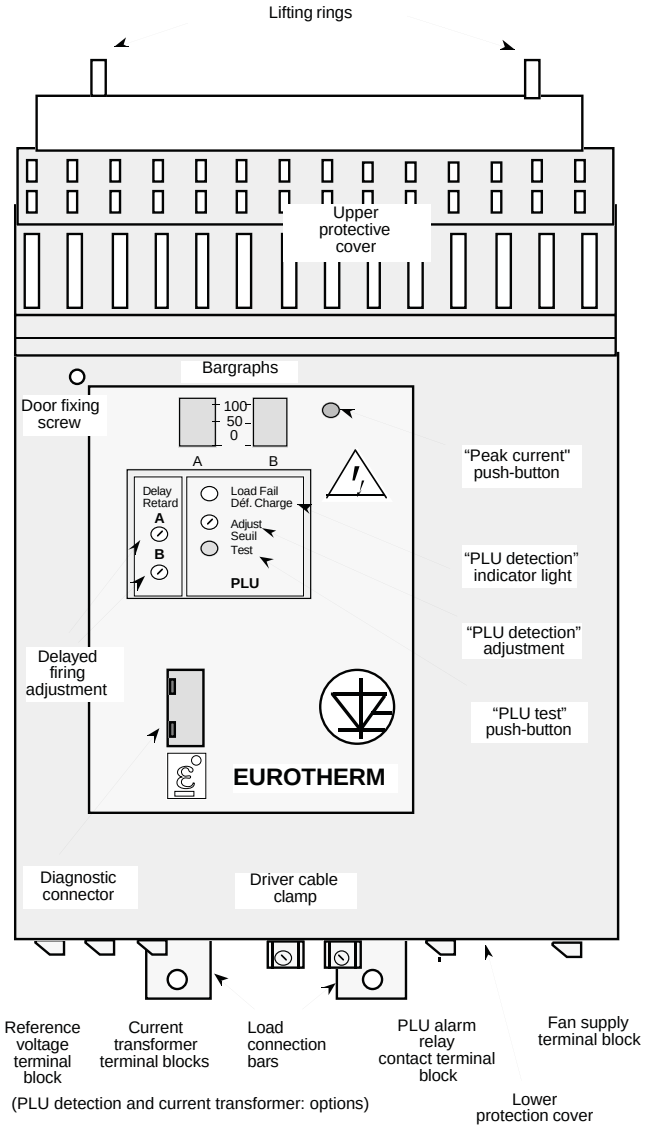

Figure 1 Overview of the TC2001/750A to 1200A thyristor unit

DIMENSIONAL DATAILS

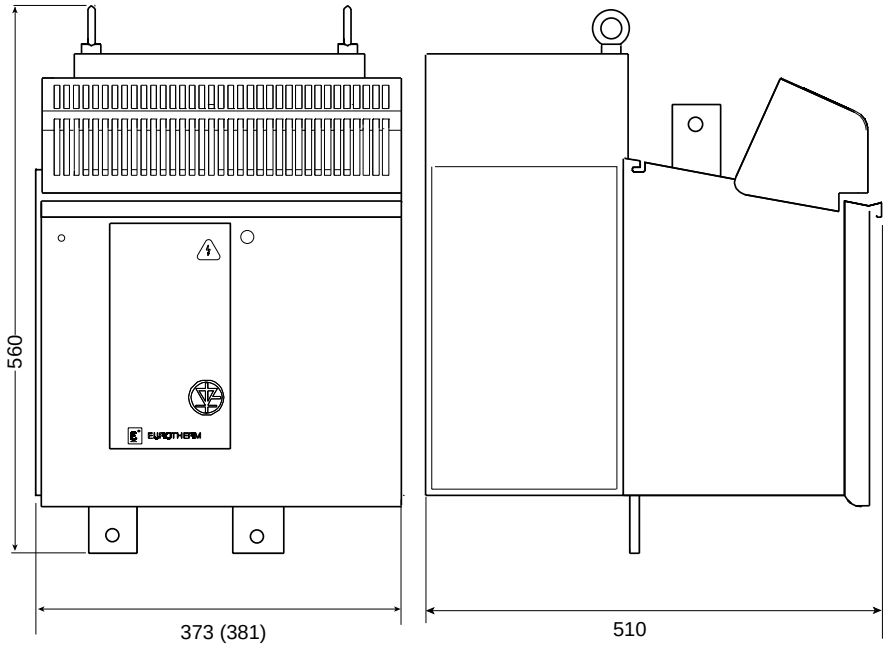

Figure 2 Overall dimensions (mm) of the TC2001/750A nominal series controller
The figures given in brackets relate to the 900A and 1200A rated units

MOUNTING DETAILS

Mounting is by means of four M10 screws on the underside or to the rear of the unit

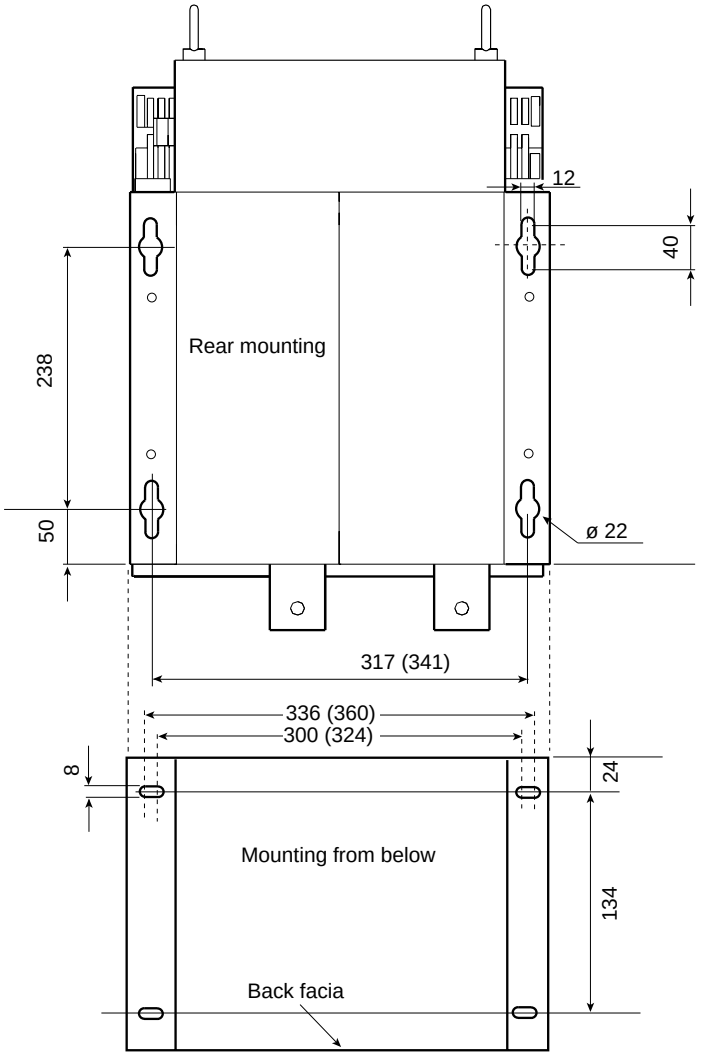

Figure 3 Mounting details (in mm) for the 750A unit
The figures given in brackets relate to the 900A and 1200A rated units

POWER CONNECTION

Cable or power bar connection: four M12 x 35mm screws torque 43.5Nm

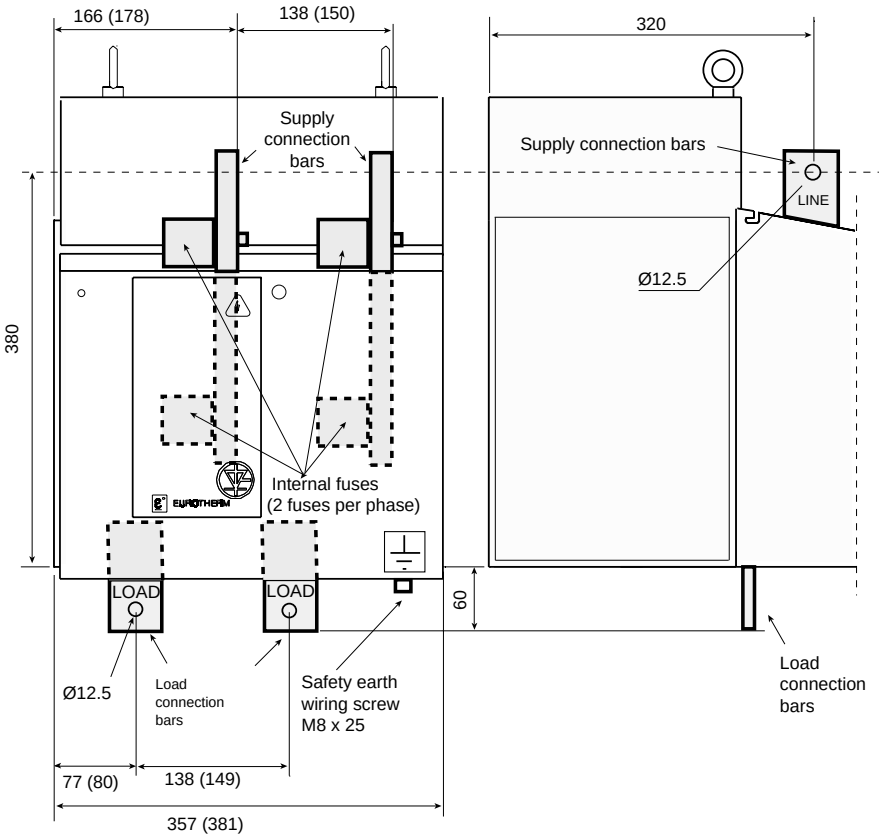

Figure 4 750A power connection (900A and 1200A in brackets)

Replacement fuses (two internal fuses per phase):

Unit rating	Eurotherm reference	Ferraz reference
750A	CS175632U630	M300069
900A	CS175632U800	P300071
1200A	CS175632U1000	S300074

Table 1 Replacement fuses

LOW CURRENT USER TERMINAL BLOCKS

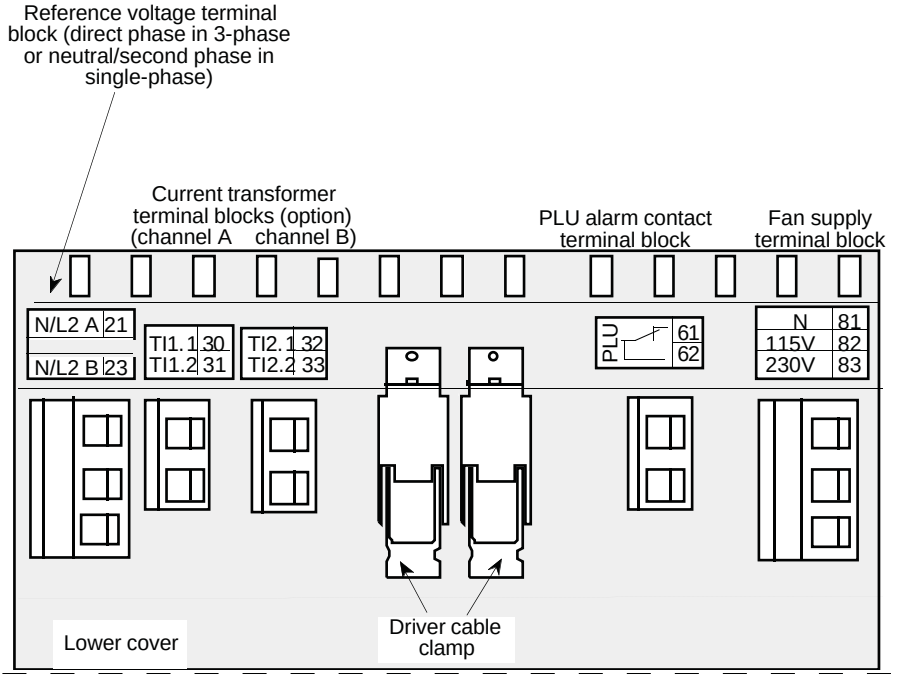

Figure 5 Layoout of low current user terminal blocks (view of unit from below)

Terminal number	Labelling	Function	
21	N/L2 A	Reference voltage for channel A	(the reference voltage is the voltage between the controlled phase and the direct (unswitched) phase in 3-phase operation, or the voltage between the supply phase and the neutral / second phase in single-phase operation)
23	N/L2 B	Reference voltage for channel B	
30 31	TI1.1 TI1.2	Channel A external current transformer secondary winding	
32 33	TI2.1 TI2.2	Channel B external current transformer secondary winding	
61, 62	PLU	Load unbalance detection alarm relay contacts (PLU alarm)	
81, 82	N, 115V	Single-phase fan supply - 115Vac (230V not available)	
81, 83	N, 230V	Single-phase fan supply - 230Vac (115V not available)	

Table 2 Terminal labelling and functions

The reference voltage and fan supply conductors should be protected by 1A fuses.

Correct wiring polarity of the current transformers (option) is ensured by connecting terminal 1 of the secondary winding (labelled S1 on the transformer) to terminal 30 (channel A) or to terminal 32 (channel B).

Warning!

For correct operation of the unit it is very important to ensure that the current transformers are wired in the correct sense, as shown in Figure 6.

In order to avoid the problem of current transformer saturation, use a 2.5mm^2 cross-section cable to connect the transformer secondaries.

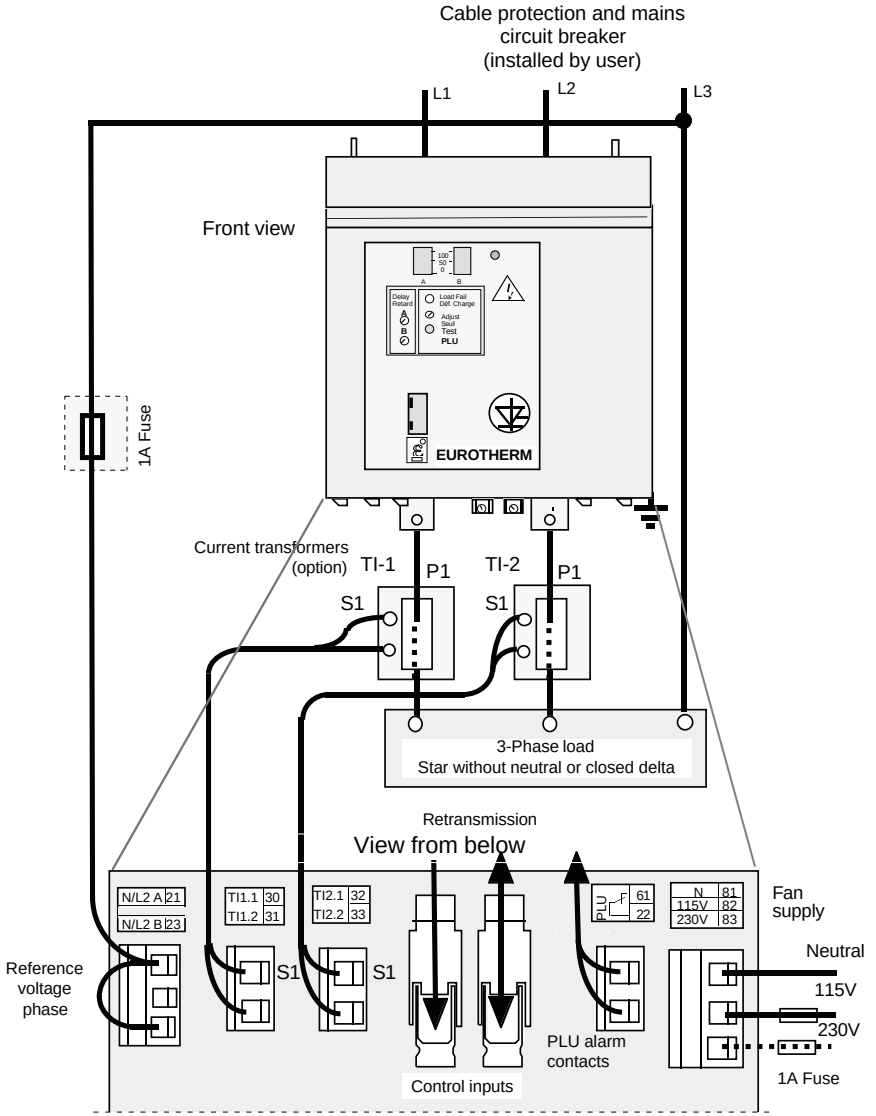

Figure 6 Wiring diagram for 750A to 1200A TC2001 compact version

MC OPTION
THYRISTOR STACK WITH SEPARATE CONTROL ELECTRONICS

OVERVIEW

IN THE MC OPTION THE THYRISTOR STACK IS NOT FITTED WITH:

- **FRONT FACIA**
- **UPPER SIDE CHEEKS**
- **LOWER COVER**

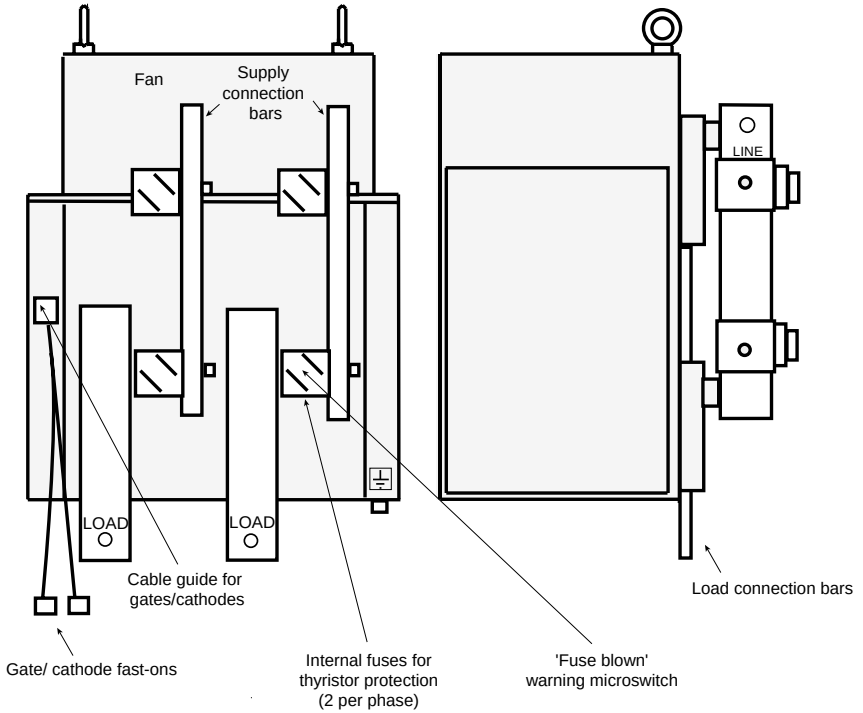

Figure 7 Overview of the TC2001 / 750A to 1200A nominal series thyristor stack - MC option

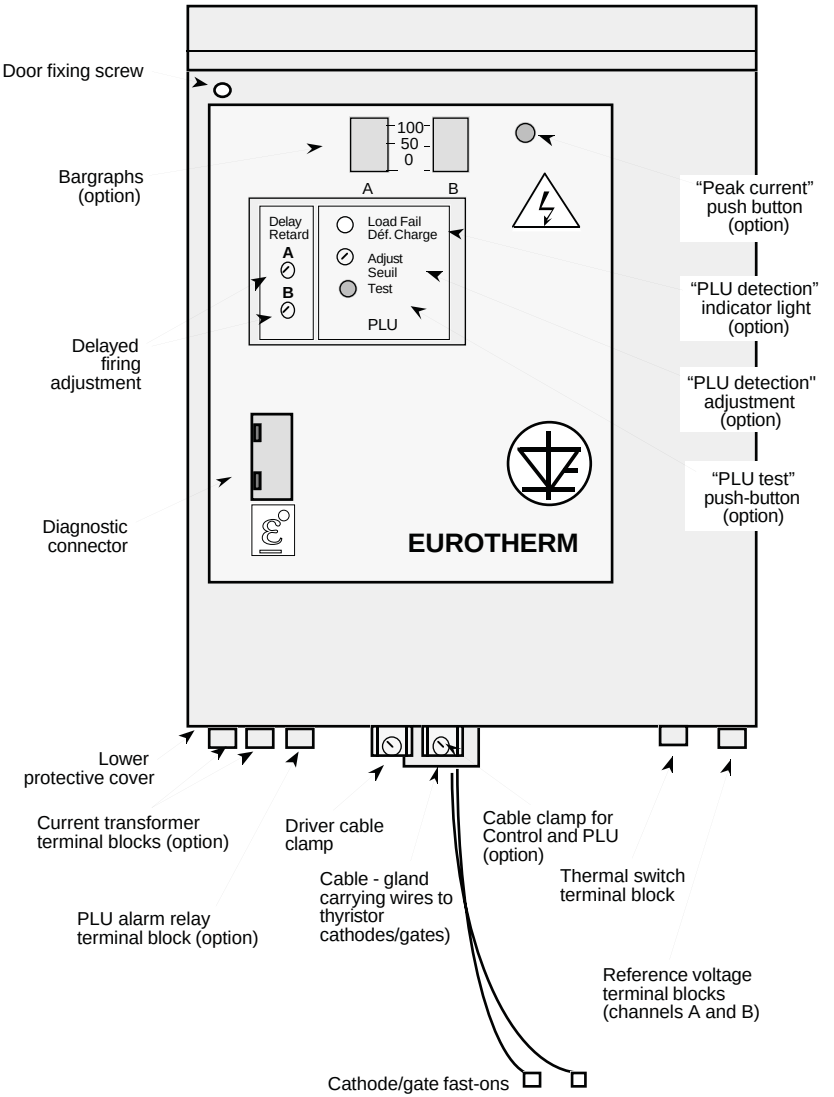

Figure 8 Overview of MC2001 driver unit

DIMENSIONAL DETAILS

Thyristor stack

Height : 560mm Width : 357mm (750A), 381mm (900A and 1200A).
Depth : 400mm

Driver unit

Height : 350mm Width : 243mm
Depth : 163mm (460mm with the door open).

MOUNTING

Mounting for the thyristor stack is the same as for the compact version.
Mounting for the driver unit is the same as for the MC2001 (see manual 'MC2001 Installation and operating instructions' ref: HA175273ENG).

POWER CONNECTION

Connections for the separate thyristor stack and the fuses are the same as for the compact version.

ELECTRICAL CONNECTIONS (thyristor stack and driver unit)

Electrical connections need to be made between the MC2001 driver unit, the thyristor stack and the current transformers (option).
Electrical connections are shown in Figure 9 in bold.
For correct operation please ensure that you follow this diagram closely.
If thyristor protection fuses have 'fuse blown' contacts, these, as well as other safety contacts (or enabling contacts) should be wired in series with the MC2001 unit enable input (see Installation and operating instructions for the MC2001).

Warning!

The external thermal switches on the thyristor block should be connected in series with the thermal safety input (terminals 65 & 66).
As shipped from the factory, the thermal safety input is open and thus the unit is inhibited.
For correct operation of the unit, connect the thermal switches to terminals 65 & 66. If the thermal switches on the thyristor stack are not used (not recommended), link terminals 65 & 66.
The thyristor cathodes / gates are connected by means of 'fast-ons'. To comply with current professional practice, leads to thyristor gates and cathodes must be protected by fuses.
Eurotherm can deliver a kit comprising looms, fast-ons, fuses and fuseholders ref: LA174389 (to be ordered separately, one kit per controlled phase). Fuseholder dimensions: 63 x 15 x 52 (mm).
The gate / cathode leads must be fully separated from the power cables. There should be a minimum distance of 10cms between the thyristor gate / cathode leads and the power conductors.
Gate / cathode leads should be formed as twisted pairs.

WIRING DIAGRAM

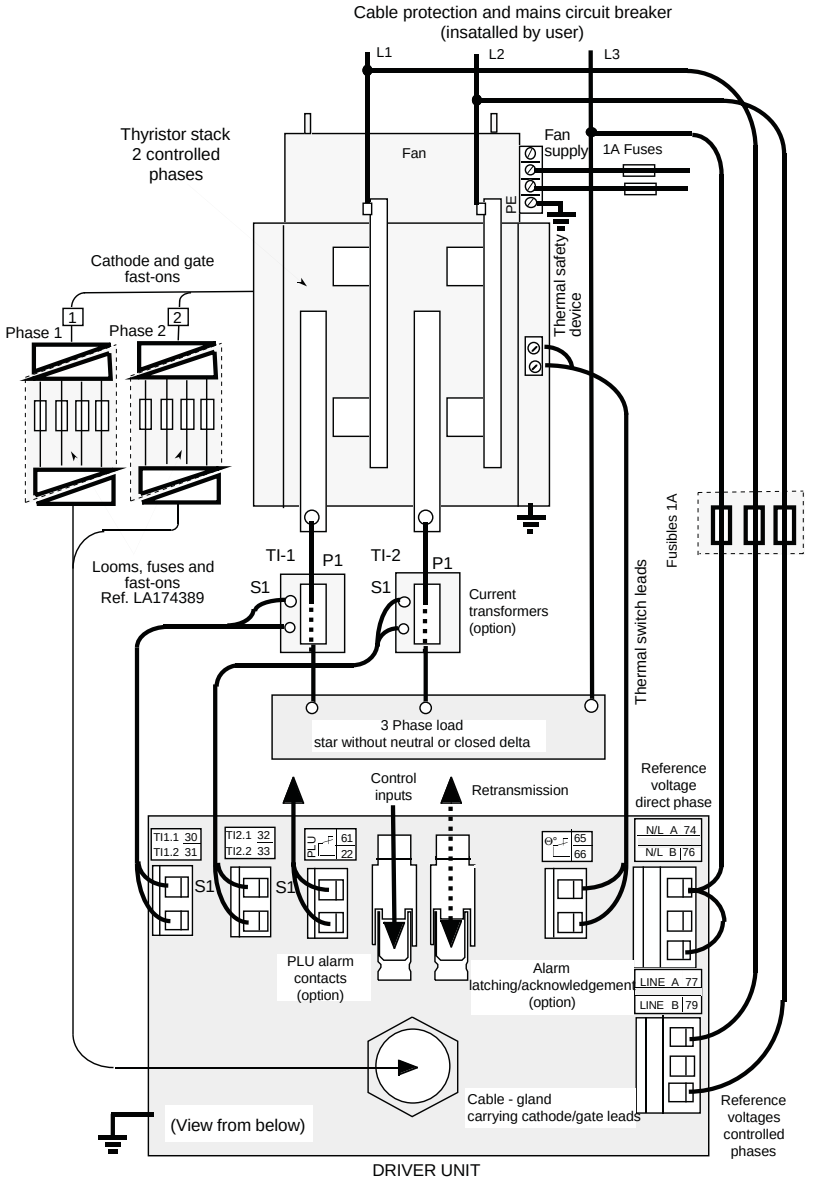

Figure 9 Electrical connections for the thyristor stack and driver unit